Life Sciences Division

E-Newsletter April 23, 2007

Dear Colleagues

In the spirit of increasing communication with DOE Headquarters Staff, we are initiating an electronic newsletter to keep you informed of noteworthy events in the Life Sciences Division at the Lawrence Berkeley National Laboratory. Our plan is to send this approximately every other week. We will cover aspects of Division management, DOE project highlights, general scientific advances, noteworthy awards, and related issues. This first e-letter is somewhat longer than usual since we are "catching up" on recent events. Please let us know if this newsletter is useful and if there are ways we can improve it.

Sincerely

Joe W. Gray, PhD
Associate Laboratory Director for Life & Environmental Sciences
Life Sciences Division Director
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Highlights

Bioimaging Workshop to Be Held in May

Cutting-edge advances in microscopy techniques over resolution scales from molecules to organisms will be the focus of the Gulliver Multiscale Bioimaging workshop May 17-19. The meeting will look at the integration of multi-modal imaging data at all levels of spatial and temporal resolution, which is essential for current biological research in bioenergy, bioremediation, cancer biology, and neurosciences. Lab speakers include Steve Chu, Chris Somerville, Carolyn Larabell, John Tainer, Robert Glaser, Jay Groves, Joe Gray, Bruce Cohen, Paul Alivisatos, and Eva Nogales. **The workshop is part of a new multiscale bioimaging initiative centered at Berkeley Lab**. For more information and to register http://www.lbl.gov/gulliver/

Today at Berkeley Lab, 4/13/07

Breast Cancer Story Airs on KGO-TV

KGO-TV reporter Carolyn Johnson visited the laboratory of Life Sciences Division Director **Joe Gray** for a story on molecular predictors of drug response in breast cancer. Three talks in this area were presented at the American Association for Cancer Research annual meeting April 14-18, 2007 by Gray, **Yinghui Guan**, and **Debopriya Das**. The group is developing molecular assays that can select existing anticancer

drugs that will be effective and allow experimental drugs to be tested first in patient subpopulations in which they will be most likely to be effective. The interview can be found at http://abclocal.go.com/kgo/story?section=drive_to_discover&id=5219796
To read a story on the research see: http://www.newswise.com/articles/view/528829/
Today at Berkeley Lab, 4/17/07 & 4/19/07

Annual Environmental Mutagen Society Meeting
Dr. **Andrew J. Wyrobek**, the president-elect of the Environmental Mutagen Society, has published the preliminary scientific program of the upcoming 38th annual meeting of the Environmental Mutagen Society to be held in Atlanta Georgia on October 20-25, 2007. The theme of the meeting is "Mutational and Epigenetic Mechanisms of Susceptibility and Risks for Genetic Diseases" and approximately 500 participants are expected from government, industry and universities. Further information about the meeting can be found at http://www.ems-us.org/.
AJW

Multi-institutional Team
Hoping to take a page from nature's playbook, a multi-institutional team of researchers led by Berkeley Lab Life Sciences biochemist **John Bielicki** has learned how a particle that sweeps cholesterol from the body forms in the arteries. Their goal is to create a therapy that jumpstarts this process in people who suffer from atherosclerosis, a life-threatening disease in which the blood vessels that feed the heart become clogged. Full story: http://www.lbl.gov/Publications/Currents/archive/#2
The Berkeley Lab View, 3/16/07

International Cancer Research Prize for Bissell
Berkeley Lab Life Scientist **Mina Bissell** is the recipient of the 2007 Pezcoller Foundation-AACR International Award for Cancer Research for her pioneering work on the relationship between cancer genetics and the three-dimensional structure of cells and tissues. Bissell is a Distinguished Scientist here and a recognized leader in the study of the extracellular matrix (ECM) – the complex physical and biochemical environment that surrounds living tissues – and how it regulates genes in both normal organs and malignant tumors. "I am honored to be the recipient of this prestigious award, and I thank the selection committee as well as the past and present members of my group for their hard work and vision" said Bissell. Full story: http://www.eurekalert.org/pub_releases/2007-03/aafc-pfi032707.php
Today at Berkeley Lab, 3/28/07

Joe Gray Elected Board Member AACR
Berkeley Lab's Associate Laboratory Director for Life and Environmental Sciences, **Joe Gray**, has been elected for a three-year term as board member for the American Association for Cancer Research, the oldest and largest scientific organization in the world focused on every aspect of high-quality, innovative cancer research. He was among a slate of new officers announced by the AACR, which also included **Zena Werb**, a Berkeley Lab biologist who was named to the Nominating Committee. Full story: http://www.aacr.org/home/about-us/news.aspx?d=732
Today at Berkeley Lab, 3/26/07

Physics and Therapeutic Radiology Circa 2012

Berkeley Lab Associate Laboratory Director for Life and Environmental Sciences, **Joe Gray** and UC San Francisco Radiation Oncology Department Head, **Mack Roach** hosted a day-long retreat/strategic planning meeting at LBNL to explore future directions in radiation therapy and imaging. The meeting was attended by faculty of the UCSF Department of Radiation Oncology and scientists from Berkeley Lab's Life Sciences, Accelerator Fusion Research, Engineering and Computer Sciences Divisions. The meeting focused on the current and future clinical applications of radiation, technical capabilities relevant to radiotherapy at Berkeley Lab, the emerging LBNL/UCSF CCC DNA repair program, new accelerator and radioisotope possibilities for radiotherapy and medical imaging.
JG 3/23/07

2006 American Statistical Association Conference on Radiation and Health

Dr. **Amy Kronenberg** was a main conference organizer of the 2006 American Statistical Association Conference on Radiation and Health, together with Dr. Mary Schubauer-Berigan of NIOSH. The conference was held at Asilomar in June 2006 and received support from the DOE Low Dose Program. The conference was entitled Radiation Research: State of the Science 20 Years After Chernobyl. International participants included epidemiologists, statisticians, radiobiologists, physicists, and clinicians with significant representation from the former Soviet Union, England, the Netherlands, Canada and the US. In addition to the focus on Chernobyl, sessions considered research advances on the biological and epidemiological consequences of exposures to low doses of radiation (below 100 mSv), updated epidemiology for several other sites in the former Soviet Union, cardiovascular effects of radiation, and advances in physical and biodosimetry; The conference also included a poster session with presentations by new investigators as well as senior investigators. A synopsis of the meeting was published in the March 2007 issue of Radiation Research along with the extended conference abstracts (Radiation Research 167:338-360, 2007).
AW

DOE Low Dose Initiates Systems Biology Collaboration with EU

Dr. **Mary Helen Barcellos-Hoff**, who was named Low Dose Chief Scientist in 2006, was a co-organizer of the First International Workshop in Systems Radiation Biology. The workshop was a result of joined efforts of three major research projects: EU Integrated Projects RISC-RAD and NOTE ("Non-targeted effects of ionizing radiation"), and the US-DOE Low Dose Program. The workshop, which focused on the challenges for modeling of radiation damage in biological systems, was held at the in GSF Institute, Neuherberg, Germany in February, 2007. See http://www.gsf.de/iss/SRB2007/index.html
MHBH

Biologist is Featured Role Model in Guide

Berkeley Lab life scientist **Jill Fuss** is featured in a resource guide for educators seeking to boost interest in science for girls in elementary and high school. Fuss is among the role models profiled in the guide, called "Get Involved. Make a Difference." In the article, Fuss discusses how she got interested in science and how she uses her car — a Volkswagon Jetta that runs on vegetable oil — to teach students about environmental issues. A View story on Fuss's car is available at:

http://www.lbl.gov/Publications/Currents/Archive/Sep-03-2004.html#story7
Today at Berkeley Lab, 2/28/07

Search for Blood Markers of Cancer
Clinicians dream of being able to diagnose cancer reliably with a simple lab test. Cancerous cells create some proteins abnormally. Some of these proteins are secreted or shed, and make their way into body fluids. The quest to identify proteins in blood or urine that signal the presence of cancer has long been a focus of research. Now, new strategies to identify reliable cancer markers are being pursued by a team — led by **Susan Fisher**, a Berkeley Lab biologist and UCSF professor — thanks to a new $1 million-per-year grant from the National Cancer Institute. Full story:
http://pub.ucsf.edu/today/cache/feature/200702223.html
Today at Berkeley Lab, 2/26/07

License for Life Scientists' Pulse Measuring Device
The Lab recently concluded an exclusive license with Endothelix, Inc. to further develop a noninvasive device for the detection of preclinical cardiovascular disease. Invented by **Thomas Budinger** and **Jonathan Maltz**, with the Life Sciences Division, the device measures the time required for a pulse to travel from a patient's wrist to the heart. This technology allows for earlier detection of cardiovascular disease, before plaques begin to form in the cardiac arteries.
Today at Berkeley Lab, 2/23/07

London Gains Grant To Fight Breast Cancer
By John Miner
London researchers have been awarded a three-year, $150,000 research grant from the U.S. Department of Defense to probe a new theory on how to stop breast cancer. Lawson Health Research Institute scientists will attempt to find a way of imaging the stem cells that are involved in the growth and spread of breast cancer. "If we can image them, ultimately you can treat them as well," said Dr. Eva Turley of the London Regional Cancer Program, who is working with **Mina Bissell**, a life scientist at Berkeley Lab.
Today at Berkeley Lab, 2/8/07

Life Scientist to Lead Mutagen Society
Berkeley Lab life scientist **Priscilla Cooper** was selected as President-elect of the Environmental Mutagen Society. Cooper, an expert on molecular mechanisms of DNA repair in humans and head of the Genome Stability Department in Life Sciences, will assume this role in October. The society provides a forum for more than 750 active members from around the world who are interested in the effect of chemicals and agents that affect the genome of humans and animals and the application of this knowledge in genetic toxicology.
Today at Berkeley Lab, 1/29/07

New Departmental Structure Life Sciences Division
Dr. Joe Gray has implemented a new department structure for the Life Sciences Division for the dual

purpose of improving communication/interaction within the Division and providing stronger support and oversight for our programs. The department/program structure is replaced by eight new departments.

Department Heads hold monthly meetings of their members to facilitate better communication on programmatic and administrative issues and needs. They also play an active role in the management of safety, and program and staff development. Further, Department Heads represent their members in strategic planning for the use of Division resources, including LDRD.

This new structure is intended to keep Division members better informed about LBNL and Divisional issues, developments and opportunities. It should also help Dr. Gray and other members of Division management to maintain a thorough understanding of the accomplishments, needs and challenges of all of our research programs. Dr. Gray believes it will result in a stronger, more interactive Life Sciences Division. An organizational chart can be found here: http://www.lbl.gov/lifesciences/orgchart.pdf

JG, 1/12/07

Recent publications (selected)

GD Rabinovici, AJ Furst, JP O'Neil, CA Racine, EC Mormino, SL Baker, S Chetty, P Patel, TA Pagliero, WE Klunk, CA Mathis, HJ Rosen, BL Miller, and WJ Jagust. 11-PIB PET imaging in Alzheimer disease and frontotemporal lobar degeneration. Neurology 2007; 68;1205-1212.

Sloter ED, Marchetti F, Eskenazi B, Weldon RH, Nath J, Cabreros D, Wyrobek AJ. Frequency of human sperm carrying structural aberrations of chromosome 1 increases with advancing age. Fertil Steril. 2007 Apr 10; [Epub ahead of print]

Kenny PA, Lee GY, Myers CA, Neve RM, Semeiks JR, Spellman PT, Lorenz K, Lee EH, Barcellos-Hoff MH, Petersen OW, Gray JW, Bissell MJ. The morphologies of breast cancer cell lines in three-dimensional assays correlate with their profiles of gene expression In Press Uncorrected Proof, Available online 6 April 2007. Molecular Oncology; DOI: 10.1016/j.molonc.2007.02.004

Mao JH, Wu D, Perez-Losada J, Jiang T, Li Q, Neve RM, Gray JW, Cai WW, Balmain A. Crosstalk between Aurora-A and p53: frequent deletion or downregulation of Aurora-A in tumors from p53 null mice. Cancer Cell. 2007 Feb;11(2):161-73.

Chang PY, Bjornstad KA, Rosen CJ, Lin S, Blakely EA. Particle radiation alters expression of matrix metalloproteases resulting in ECM remodeling in human lens cells. Radiat Environ Biophys. 2007 Jan 26; [Epub ahead of print]

Chin K, DeVries S, Fridlyand J, Spellman PT, Roydasgupta R, Kuo WL, Lapuk A, Neve RM, Qian Z, Ryder T, Chen F, Feiler H, Tokuyasu T, Kingsley C, Dairkee S, Meng Z, Chew K, Pinkel D, Jain A, Ljung BM, Esserman L, Albertson DG, Waldman FM, Gray JW. Genomic and transcriptional aberrations linked to breast cancer pathophysiologies. Cancer Cell. 2006 Dec;10(6):529-41.

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Spellman PT, DeVries S, Lapuk A, Wang NJ, Kuo WL, Stilwell JL, Pinkel D, Albertson DG, Waldman FM, McCormick F, Dickson RB, Johnson MD, Lippman M, Ethier S, Gazdar A, Gray JW. A collection of breast cancer cell lines for the study of functionally distinct cancer subtypes. Cancer Cell. 2006 Dec; 10(6):515-27.